

I Claim:

1. An optical marking apparatus comprising:
 - a housing having a power source provided therein;
 - a laser illuminator mounted in said housing and operatively projecting a laser optical line outwardly from said housing on an object to be marked; and
 - an angle-variating means formed in said housing and defining a fulcrum axis longitudinally in said housing, whereby upon an angular rotation of said housing about said fulcrum axis, a laser optical line as projected from said laser illuminator will be angularly deviated from an original datum line about said fulcrum axis for an angular marking on the object.
2. An optical marking apparatus according to Claim 1, wherein said housing includes: a bottom plate, an illuminator holder protruding upwardly from the bottom plate for mounting the laser illuminator thereon, and a chamber formed in the holder for storing a plurality of batteries of the power source and having a bottom cover covering the chamber.
3. An optical marking apparatus according to Claim 1, wherein said laser illuminator includes a lens device having at least a lens formed in front of the laser illuminator and an integrated circuit including a laser diode for energizing the laser illuminator for emitting a laser optical line outwardly through an opening formed in a front portion of the housing.

4. An optical marking apparatus according to Claim 2, wherein said laser illuminator is mounted in a calibrating means secured in a socket formed in the holder within the housing for calibrating a laser optical line projected from the laser illuminator.
5. An optical marking apparatus according to Claim 4, wherein said calibrating means includes: an eccentric adjusting sleeve disposed around the laser illuminator, an inner inclined adjusting sleeve disposed around the eccentric adjusting sleeve, a jacket having a lens secured in a recess formed in a front portion of the jacket and having an inside hole for engaging the inner inclined adjusting sleeve in the inside hole in the jacket, an outer inclined adjusting sleeve having an inner hole engaged with the jacket, and a cylindrical casing disposed around the outer inclined adjusting sleeve and secured in the socket formed in the holder within the housing.
6. An optical marking apparatus according to Claim 3, wherein said lens device includes a cylindrical-surfaced lens and a lens for projecting laser optical line towards a front surface or base surface in front of said illuminator.
7. An optical marking apparatus according to Claim 3, wherein said lens includes a central transparent zone formed on the lens having a pair of opaque shields disposed on a left and right side of the central transparent zone, thereby allowing the laser optical line projecting outwardly through the central transparent

zone on the lens.

8. An optical marking apparatus according to Claim 1, wherein said housing includes a levelling means having two bubble levelers formed on a top portion of the housing, with the two bubble levelers orienting to be perpendicular with each other for checking horizontality of the apparatus when horizontally positioned.
9. An optical marking apparatus according to Claim 1, wherein said housing includes a front pointer and a rear pointer respectively formed on a front and a rear end of the bottom plate of the apparatus, both said pointers linearly linked to be projectively aligned with a laser optical line as projected from the laser illuminator.
10. An optical marking apparatus according to Claim 1, wherein said angle-varying means includes: a front positioning device formed on a front portion of the housing, and a fulcrum positioning device formed on a rear portion of the housing, and an angle-indicating disk disposed about the fulcrum positioning device, whereby upon an angular rotation of the front positioning device about a fulcrum axis in the fulcrum positioning device in an angle as shown in the angle-indicating disk, a laser optical line will be projected outwardly from the laser illuminator to be deviated in said angle from a laser optical line as originally projected from the illuminator.

11. An optical marking apparatus according to Claim 10, wherein said front positioning device includes: a front needle inserted into an object to be marked through a needle hole formed in the front portion of the housing, a depression button formed on a top of the needle through a button hole formed in the front wall, a tension spring retained between the depression button and the bottom plate of the housing to resiliently restore the depression button upwardly having a flange formed on the depression button to be upwardly limited below the button hole, whereby upon an angular rotation of the front positioning device to a desired position, the depression button will be depressed downwardly for inserting the needle into the object for fixing the apparatus on the object.
12. An optical marking apparatus according to Claim 10, wherein said fulcrum positioning device includes: a fulcrum needle inserted into the object through a rear needle hole formed in a rear portion of the bottom plate and defining a fulcrum axis perpendicular to the bottom plate of the housing and axially formed in a center of the angle-indicating disk, a stem axially connected on a top of the fulcrum needle, and a restoring spring resiliently tensioning the stem upwardly to be ready for a downward depression of the stem to downwardly insert the fulcrum needle into the object to serve as a fulcrum for the angular rotation of the front positioning device of the

angle-varying means.

13. An optical marking apparatus according to Claim 12, wherein said fulcrum positioning device has the stem formed with a depression knob on a top of the stem, and an alignment mark formed on the stem to indicate the rotating angles as shown on the angle-indicating disk.
14. An optical marking apparatus according to Claim 12, wherein said stem has a retainer ring formed on a lower portion of the stem to be upwardly urged by said restoring spring retained between a limiting plate and a bottom portion in a rear portion of the housing.
15. An optical marking apparatus according to Claim 12, wherein said housing includes a hanger formed on a central rear portion of a rear wall of the housing, having a center of the hanger projectively aligned with the fulcrum axis of the fulcrum positioning device to allow the housing to be gravitationally hanged on an object wall for marking.
16. An optical marking apparatus according to Claim 10, wherein said housing includes a front pointer and a rear pointer linearly linked to extrapolatively define a base reference line to be perpendicularly intersected with said fulcrum axis of said fulcrum positioning device, and upon an indication of zero degree on the angle-indicating disk by the alignment mark of the fulcrum positioning device, the base reference line defined by

the front and rear pointers will be projectively aligned with the laser optical line as emitted from the laser illuminator.

17. An optical marking apparatus according to Claim 1, wherein said housing includes a screw hole formed in a bottom of the housing to be engaged with a supporting frame, or to be secured with a magnet to be magnetically attracted on a ferrous object.